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REPUBLIEK VAN SUID-AFRIKA



REPUBLIC OF SOUTH AFRICA

Patent Certificate
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 PATENT OFFICE

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 AND INDUSTRY

Hiermee word gesertifiseer dat

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Application forms P.1 and P.3, provisional specification and drawings of South African Patent Application No. 98/9689 as originally filed in the Republic of South Africa on 23 October 1998 in the name of LESLIE JOHN CASS for an invention entitled: "MONITORING SYSTEM".

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 in the Republic of South Africa, this

 3rd dag van
 day of

November 1999

 Registrateur van Patente
 Registrar of Patents

REPUBLIC OF SOUTH AFRICA
PATENTS ACT, 1978
APPLICATION FOR A PATENT AND
ACKNOWLEDGEMENT OF RECEIPT
(Section 30(1) Regulation 22)

REPUBLIC OF SOUTH AFRICA
FORM P.1
(to be lodged in duplicate)
REVENUE

23.10.98

R 060,00

THE GRANT OF A PATENT IS HEREBY REQUESTED BY THE UNDERMENTIONED APPLICANT
ON THE BASIS OF THE PRESENT APPLICATION FILED IN DUPLICATE

21 01 PATENT APPLICATION NO

989689

REPUBLIC VAN SUID AFRIKA
A&A-REG-HAS 1308370

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54 TITLE OF INVENTION

MONITORING SYSTEM

Only the items marked with an "X" in the blocks below are applicable.

☐ THE APPLICANT CLAIMS PRIORITY AS SET OUT ON THE ACCOMPANYING FORM P.2. The earliest priority claimed is

Country:

No:

Date:

☐ THE APPLICATION IS FOR A PATENT OF ADDITION TO PATENT APPLICATION NO

21 01

☐ THIS APPLICATION IS A FRESH APPLICATION IN TERMS OF SECTION 37 AND BASED ON
APPLICATION NO

21 01

THIS APPLICATION IS ACCOMPANIED BY:

- ☒ A single copy of a provisional specification of 10 pages
- ☒ Drawings of 3 sheets
- ☐ Publication particulars and abstract (Form P.8 in duplicate) (for complete only)
- ☐ A copy of Figure of the drawings (if any) for the abstract (for complete only)
- ☐ An assignment of invention
- ☐ Certified priority document(s). (State quantity)
- ☐ Translation of the priority document(s)
- ☐ An assignment of priority rights
- ☐ A copy of Form P.2 and the specification of RSA Patent Application No
- ☒ Form P.2 in duplicate
- ☐ A declaration and power of attorney on Form P.3
- ☐ Request for ante-dating on Form P.4
- ☐ Request for classification on Form P.9
- ☐ Request for delay of acceptance on Form P.4
- ☐ Extra copy of informal drawings (for complete only)

21 01

74 ADDRESS FOR SERVICE: Adams & Adams, Pretoria

Dated this 23 day of October 1998

ADAMS & ADAMS
APPLICANTS PATENT ATTORNEYS

The duplicate will be returned to the applicant's address for service as
proof of lodging but is not valid unless endorsed with official stamp

A&A P201

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OFFICIAL DATE STAMP
1998 -10- 23
REGISTRATEUR VAN PATENTE, MODELLE, HANDELSMERKE EN OUTEURSREG
REGISTRAR OF PATENTS

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REPUBLIC OF SOUTH AFRICA
PATENTS ACT, 1978
DECLARATION AND POWER OF ATTORNEY
(Section 30 - Regulation 8, 22(i)(c) and 33)

REPUBLIC OF SOUTH AFRICA
REVENUE FORM P 3

-5.11.98

R 00100

PATENT APPLICATION NO		
21	01	98/9689

A&A Ref: V13085

LODGING DATE
22 OCT 1998

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FULL NAME(S) OF INVENTOR(S)	
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EARLIEST PRIORITY CLAIMED		COUNTRY		NUMBER		DATE	
		33	NIL	31	NIL	32	NIL

NOTE: The country must be indicated by its International Abbreviation - see schedule 4 of the Regulations

TITLE OF INVENTION	
54	MONITORING SYSTEM

* I/We **LESLIE JOHN CASS**

hereby declare that :-

1. I/we am/are the applicant(s) mentioned above;

~~*** 2. I/we have been authorized by the applicant(s) to make this declaration and have knowledge of the facts herein stated in the capacity of of the applicant(s);~~

~~*** 3. the inventor(s) of the abovementioned invention is/are the person(s) named above and the applicant(s) has/have acquired the right to apply by virtue of an assignment from the inventor(s);~~

4. to the best of my/our knowledge and belief, if a patent is granted on the application, there will be no lawful ground for the revocation of the patent;

~~**** 5. this is a convention application and the earliest application from which priority is claimed as set out above is the first application in a convention country in respect of the invention claimed in any of the claims; and~~

6. the partners and qualified staff of the firm of **ADAMS & ADAMS**, patent attorneys, are authorised, jointly and severally, with powers of substitution and revocation, to represent the applicant(s) in this application and to be the address for service of the applicant(s) while the application is pending and after a patent has been granted on the application.

SIGNED THIS

26

DAY OF

OCTOBER

1998.

LESLIE JOHN CASS

(no legalization necessary)

- * In the case of application in the name of a company, partnership or firm, give full names of signatory/signatories, delete paragraph 1, and enter capacity of each signatory in paragraph 2.
- ** If the applicant is a natural person, delete paragraph 2.
- *** If the right to apply is not by virtue of an assignment from the inventor(s), delete "an assignment from the inventor(s)" and give details of acquisition of right.
- **** For non-convention applications, delete paragraph 5.

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PRETORIA

FORM P6

REPUBLIC OF SOUTH AFRICA
Patents Act, 1978

PROVISIONAL SPECIFICATION

(Section 30 (1) - Regulation 27)

21	01	OFFICIAL APPLICATION NO
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98968

22	LODGING DATE
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23 October 1998

71	FULL NAME(S) OF APPLICANT(S)
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LESLIE JOHN CASS

72	FULL NAME(S) OF INVENTOR(S)
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54	TITLE OF INVENTION
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MONITORING SYSTEM

THIS INVENTION relates to a monitoring system. It also relates to a remote unit and to a base unit for use in the system. Further, it also relates to a method of monitoring the use of parking bays by motor vehicles and to a method of identifying illegal use of a vehicle.

- 5 According to the invention broadly, there is provided a remote unit for monitoring the use of a of group of parking bays, the remote unit including input means for inputting observed particulars of a vehicle requiring use of any one of the parking bays in the group of parking bays;
- storage means in which reference particulars of pre-identified vehicles are
- 10 operatively stored; and
- processing means for comparing the observed particulars and the reference particulars and selective generating a warning signal in response to the comparison.

- Further in accordance with the invention, there is provided a system
- 15 for monitoring the use of parking bays, the system including
- a plurality of remote units each of which is associated with a group of parking bays and includes
- input means for inputting observed particulars of a vehicle requiring use of any one of the parking bays in the group of parking bays;
- 20 storage means in which reference particulars of pre-identified vehicles are operatively stored;
- processing means for comparing the observed particulars and the

reference particulars and selectively generating a warning signal in response to the comparison; and

a communication interface for communicating the warning signal;
and

- 5 a base station including a corresponding communication interface for receiving the warning signal.

The communication interfaces are preferably bi-directional communication interfaces which communicate via a wireless communication channel. Accordingly, the base station may include a central database in which
10 the reference particulars are stored and which are downloaded into the storage means of each remote unit via the communication channel. The communication channel is typically a conventional cellular telephone network and the data may be downloaded by means of a conventional SMS (short message system). The communication interfaces may thus be cellular telephone modules. In other
15 embodiments, the communication channel may be a hardwired link, an RF link, or any other conventional communication link.

The base station may include a further communication interface arranged to interface with NATIS (National Traffic Information Service). The interface may be configured to communicate via the internet to NATIS, law
20 enforcement authorities, or the like. A plurality of regional base stations may be provided which are each linked via a communication network, e.g. the Internet, to a national control centre. The invention accordingly extends to an installation for monitoring the use of parking bays which includes a plurality of regional base stations connected to a national control centre as hereinbefore described.

25 Typically, the reference particulars are particulars of stolen vehicles. Accordingly, the reference particulars may be the make, color, registration number or the like of the vehicle.

The remote unit may be manned by a supervisor and is thus preferably housed in a compact portable housing e.g. a waterproof hand-held housing.

5 The remote unit may include display means for displaying the reference and/or observed particulars. Accordingly, in the event of the particulars corresponding, the observed particulars may be checked prior to generating the warning signal.

10 The remote unit may include timing means for timing the duration for which the vehicle is parked in the bay. Accordingly, the processor means may be operable to calculate a monetary amount payable by the driver of the vehicle. The storage means may thus include data defining a rate payable by the driver, e.g. a rate per hour during the day, during the evening, and so on.

15 The remote unit may include monetary receiving means for receiving monetary value, e.g. from a credit card, smart card, or the like. The processing means may update the storage means thereby to keep a record of monetary value received e.g. cash received, credit card transactions, smart card transactions, or the like.

20 The remote unit may include a printer for printing a hard-copy of selected data, e.g. the reference and/or observed particulars, a receipt for monetary value received, or the like.

25 The remote unit may include enabling means for enabling the remote unit. For example, the processing means and the input means may define the enabling means. In use, upon entering a correct PIN code into the input means, the unit may be enabled. The PIN code may be communicated between the base station and the remote unit.

Further in accordance with the invention, there is provided a method of monitoring the use of parking bays by vehicles by means of a remote unit as hereinbefore described, the method including

providing a supervisor to supervise over a group of parking bays and
5 equipping the supervisor with a remote unit;

feeding observed particulars of a vehicle requiring use of a vacant parking bay into the remote unit; and

receiving monetary value for use of the parking bay.

Still further in accordance with the invention there is provided a
10 method of monitoring illegal use of a vehicle, the method including

feeding observed vehicle particulars of a vehicle using a parking bay into a remote unit as hereinbefore described;

comparing the observed particulars with reference particulars stored in storage means of the remote unit, the reference particulars including information
15 for identifying vehicles being used illegally; and

selectively generating a warning signal dependent upon the outcome of the comparison.

The invention is now described, by way of example, with reference to the accompanying diagrammatic drawings.

20 In the drawings,

Figure 1 shows an installation, in accordance with the invention, for monitoring the use of parking bays;

Figure 2 shows a schematic representation of a remote unit, also in accordance with the invention, of the installation of Figure 1; and

25 Figure 3 shows a schematic block diagram of the remote unit of Figure 2.

Referring to the drawings, reference numeral 10 generally indicates an installation, in accordance with the invention, for monitoring the use of a

plurality of parkings bays 12 (only a few of which are shown and referenced in the drawings). The installation 10 includes a national control centre 13 which is connected via a communication link 14, e.g. the internet, to a plurality of base stations 16 (only a few of which are shown in the drawings) which are located
5 in various parts of the country e.g. in various suburbs, shopping centres, or the like. Each base station 16 is remotely connected to a plurality of portable remote units 18 via a conventional cellular telephone network 20. The parking bays 12 are arranged in groups, each group being associated with a specific portable remote unit 18 which is allocated to a supervisor (not shown) who, with the aid
10 of the portable remote unit 18, monitors the use of the parking bays 12 as described in more detail below.

The national control centre 13 is linked to NATIS via a digital communication link, e.g. the internet, so that reference particulars such as the model, make, color, or registration particulars of vehicles, e.g. stolen vehicles,
15 may be fed into its internal storage means. The national control centre 13 thus includes comprehensive details on vehicles such as stolen vehicles which may then be communicated via the communication link 14 to each base station 16 where the particulars are stored in its internal memory. Each remote unit 18 includes a memory 22 (see Figures 2 and 3) in which a database of reference
20 particulars of vehicles is stored. The reference particulars are downloaded from the base station 16 via the conventional cellular telephone network 20 in the form of an SMS (Short Message System). During the course of the day if further referenced particulars e.g. particulars of a vehicle which has been stolen during the course of the day are required, these particulars may be instantaneously
25 downloaded into the memory 22 via the network 20.

The portable remote units 18 include a housing which is water-proof and which is shaped and dimensioned to define a hand-held unit which includes its various components. The remote unit 18 includes a display 24 (see Figures 2 and 3) for displaying various information to the supervisor, as described in more

detail below. The remote unit 18 further includes input means in the form of a keypad 26, a warning LED 30, a printer 32, a power supply unit 34 which includes a lithium re-chargeable battery for powering the remote unit, a cellular interface 36 which is operable to receive and transmit data via the conventional
5 cellular telephone network 20, and reading means for reading monetary value from a smart card, a credit card, or the like.

When a driver of a vehicle requiring use of a particular parking bay has parked his car, the supervisor of the group of parking bays in which the specific bay is located approaches the vehicle and, via the keypad 26 of his
10 remote unit 18, enters observed particulars of the vehicle into the remote unit 18. The observed particulars are typically the registration number of the vehicle and the processor unit 28 then access the memory 22 in which a database of vehicle particulars are stored. Referenced particulars corresponding to the registration number are then retrieved from the memory 22 and displayed on the display 24.
15 The referenced particulars typically include the make, color, model etc. of the vehicle and the supervisor then visually compares these particulars with the vehicle parked in the parking bay. In the event of there being a mismatch between the reference particulars and the observed particulars, the supervisor may then alert the relevant authorities by communicating a warning signal to the
20 base station 16 associated with the particular remote unit 18.

Further, the memory 22 includes comprehensive details on vehicles which are being illegally used e.g. stolen vehicles or the like. The processor unit 28 thus compares the registration number which has been fed in via the keypad 26 with a database of stolen vehicles in the memory 22 and, if the comparison
25 is positive, the processor unit 28 activates the warning LED 30 thereby to alert the supervisor. The supervisor may then double check that the vehicle registration number which he has fed in via the keypad 26 is correct by comparing the observed registration number of the vehicle with the particulars entered in via the keypad 26 and which are displayed on the display 24. If the correct

registration has in fact been entered, the warning signal may be either automatically, or in response to an action of the supervisor, be transmitted via the cellular interface 36 to the associated base station 16. The associated base station 16 may then alert the relevant authorities e.g. the police or the like. It is however to be appreciated that, instead of the cellular communication link 20, a radio link, a wired link via a conventional hardwired telephone system, or the like may be used to communicate between the base station 16 and the remote unit 18.

In addition to entering the vehicle registration number into the remote unit 18, each parking bay 12 associated with the specific remote unit 18 is numbered and an identification number of the specific parking bay is also entered into the remote unit 18 via the keypad 26 in use. Once parking of the vehicle in the specific parking bay has been authorised, timing means for timing the duration of the vehicle in the parking bay is then initialised. The processor unit 28 retrieves referenced data from the memory 22 which may be selectively download it into the memory 22 from the base station 16. The processor unit 28 then calculates the rate of charge dependent on the time of day, day of the week, or the like.

The display 24 is typically a ten line 30 digit LCD display which, under control of the processor unit 28, displays the registration number of the vehicle, the number of the parking bay in which the vehicle is parked, the time and date, the rate per hour for use of the parking bay, or the like. Once the supervisor has received payment for use of the parking bay and entered payment details into the remote unit 18 via the key pad 26, the display may confirm payment by displaying "Thank you. Payment made before departure. Pay only the amount on the screen". It is to be appreciated however that any other messages may be displayed on the display 24. The processor means may thus keep financial records of the financial transactions that take place during the course of the day and may then transmit comprehensive details to its associated base

station 16. The base station 16 also includes processor means for generating statistics on the use of the various parking bays, running accounts on the total amount of cash received or the like.

In the event of the user not paying the supervisor the required amount, the remote unit 18 may communicate the reference particulars of the vehicle to the base station 16 which may then notify the relevant local authorities in order to take legal action. In order to facilitate payment to the supervisor, the reading means 38 is provided for receiving smart cards, credit cards, or the like. A facility is typically provided in the remote unit 18 to provide benefits for regular or monthly parking users.

The remote unit 18 is arranged so that the user may prepay for use of the bay for a specific period of time or pay the supervisor upon returning to collect the vehicle. In the event of the user prepaying the supervisor, the printer 32 may print the appropriate receipt in advance. However, in the event of the user only paying the supervisor upon returning to the vehicle, the identification number of the parking bay is entered into the portable unit 18 which then displays the registration number of the vehicle presently parked in the bay. The processor unit 28 then calculates the amount due and display 24 then indicates that this amount must be paid directly to the attendant. It is to be appreciated that they display 24 may then further display various other messages such as "Not paid yet", "If not paid legal action will follow from the local authority" or the like.

In order to avoid unauthorised use of each remote unit 18, each supervisor is furnished with a unique identification code or PIN number which is fed into the unit 18 via the keypad 26. If the PIN number matches a reference PIN number in the memory 22 the remote unit is activated or unable. The referenced PIN number may be downloaded from the base station 16 via the network 20.

Figure 3 of the drawings shows an embodiment of electronic circuitry of the remote unit 18. The unit 18 includes a conventional cellular telephone antenna 40 which is connected via line 42 to a standard cell phone receiver including a conventional pre-amp, local oscillator, mixers, IF amplifiers and detectors. The receiver 44 is coupled to a detector/decoder 46 which, in turn, is connected to the memory 22 and to the display 24 and a logic amplifier and digital interface. The unit 18 includes a PC compatible interface 48 for connection to computing facilities at the base station 16. Further, a transmitting arrangement 50 and a standard cellular telephone transmitter 52 are provided for communicating with the base station 16.

The installation 10 provides a facility at the national control centre 13 to monitor use of a legal vehicle registration number at different locations or areas throughout the country. In particular, similar vehicle registrations are monitored and time durations between monitoring of the same registration number are determined to see if the distance travelled by the vehicle is feasible. If it appears that duplicate registration numbers exist, the appropriate authorities may be contacted for legal action.

The inventor believes that the invention, as illustrated, provides an enhanced installation 10 for monitoring the use of stolen vehicles. As the registration number of the vehicle requiring use of the parking bays is entered into the remote unit 18, each time a vehicle is parked the registration particulars may be compared with a referenced database to identify the illegal use of vehicles.

DATED THIS 23RD DAY OF OCTOBER 1998

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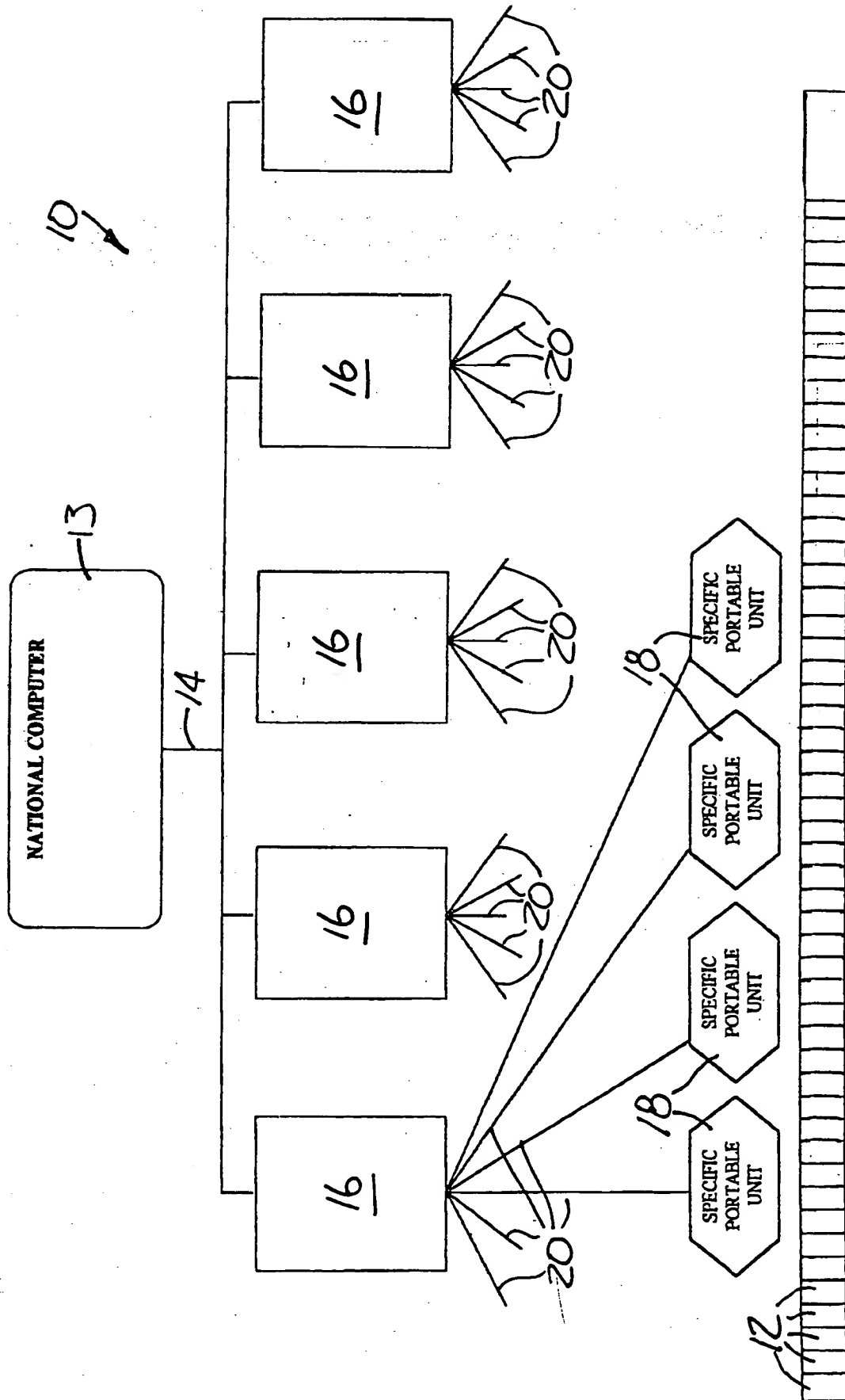


FIG 1

